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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,752	02/23/2004	Gary L. Karr	MDM 2 002-3	2199

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EXAMINER	
DEL SOLE, JOSEPH S	

ART UNIT	PAPER NUMBER
1722	

DATE MAILED: 11/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/784,752	KARR ET AL.	
	Examiner	Art Unit	
	Joseph S. Del Sole	1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) *16-27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 28-36* is/are rejected.

7)☒ Claim(s) *7-15 and 37-43* is/are objected to.

8)☒ Claim(s) *1-43* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-15 and 28-43, drawn to a combination, classified in class 425, subclass 325.

   II. Claims 16-27, drawn to a subcombination, classified in class 425, subclass 388.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the combination can cool material without standoff structures. The subcombination has separate utility such as a pipe forming apparatus without mold translation, return and release assemblies such as that shown in Rahn (6,015,282).

3. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Ms. Diane Burke on 11/4/05 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-15 and

28-43. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-27 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-6 and 28-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dietrich et al (5,773,044) in view of Lupke et al (6,054,089).

A system for producing corrugated pipe by maneuvering paired molds about a die assembly generally disposed about a system axis and having a paired mold receiving region, a paired mold reference region, an annular die nozzle spaced from said reference region at the entrance of a forming tunnel region defined by an abutting sequence of paired molds extending to a forming tunnel exit having a plurality of paired molds, each mold having a generally semi- cylindrically configured corrugate mold profile, each said mold being supported upon a carriage assembly having a first locus of travel generally parallel with said axis and a second locus of travel generally transverse to said axis extending between mold defining and release orientations and each said carriage assembly having a connector assembly drivable to move said mold in a direction generally parallel with said axis (Fig 1);

a translation assembly extending in parallel relationship with said axis generally from said reference region to said forming tunnel exit location and engageable in driving relationship with the connector assemblies of said paired molds to effect their

movement through said forming tunnel region along said first locus of travel when their associated carriage assemblies are in said mold defining orientation (Fig 1);

first and second mold return assemblies each spaced outwardly from said axis and configured to receive one mold of each mold pair at a respective first and second receiving position and to drivably move each said received mold to respective first and second queue regions having respective first and second forwardmost feed positions and to move each mold at said first and second forwardmost feed positions to respective first and second acquisition positions (Fig 3);

first and second release assemblies respectively drivably engageable with one mold of a said mold pair generally subsequent to movement of said mold pair through said forming tunnel region and configured to drive the carriage assembly of each said mold along said second locus of travel into said release orientation and move said molds to respective said first and second receiving positions (Fig 12);

first and second mold feed assemblies configured to move the molds of a mold pair from respective said first and second acquisition positions to a paired mold receiving region (Figs 14); and

a mold positioning assembly engageable with a mold pair at said receiving region and configured to move said mold pair at said receiving region into abutting engagement with a mold pair located at said reference region (Fig 5);

said first and second return assemblies are configured to maneuver respective said mold carriage assemblies along said second locus of travel into said mold defining orientation (Fig 12);

said translation assembly comprises a screw assembly having a screw axis generally parallel with said system axis and drivably rotatable about said screw axis (Fig 7, #57);

each said mold connector assembly is configured as a radial follower nut engageable in driven relationship with said screw assembly (Fig 7, #57);

said screw assembly is configured having a screw thread pitch (Fig 7, #57);

said partial follower nut is configured with nut threads having a thread pitch corresponding with said screw thread pitch (Fig 7, #57);

each said carriage assembly is configured having rearward and forward bumpers having abutment surfaces wherein said mold positioning assembly effects the abutting engagement of the abutment surfaces of forward bumpers of a mold pair at said receiving region with the abutment surfaces of rearward bumpers of a mold pair at said reference region, said abutment surfaces of said rearward and forward surfaces being spaced apart along said first locus of travel a reference distance effective to locate said nut threads in continuous pitch relationship with said screw thread pitch (Fig 6);

either said reference distance or the sum of reference distances for a sequence of mutually abutting surfaces of rearward and forward bumpers is an integer multiple of said thread pitch (Fig 7);

a plurality of paired molds, each mold having a generally semi- cylindrically configured corrugate mold profile, each said mold being supported upon a carriage assembly having a rail mountable primary carriage with a first locus of travel generally parallel with said axis and a secondary carriage with a second locus of travel generally

transverse to said axis extending between mold defining and release orientations and each said carriage assembly having a connector assembly drivable to move said mold in a direction generally parallel with said axis (Fig 1);

first and second feed assemblies extending generally transversely to said system axis from respective first and second acquisition positions to a paired mold receiving region generally aligned with said system axis, each said first and second feed assembly being configured to acquire a mold of a mold pair at a respective said first and second acquisition position and move it into paired relationship establishing a said mold pair at said receiving region (Fig 3);

a translation assembly generally extending in parallel with said axis drivably engageable with the connector assemblies of the said primary carriages of a mold pair at a reference region to establish a forming tunnel region as a sequence of mutually adjacently disposed paired molds moving in driven relationship with said translation assembly along said primary carriage first locus of travel (Fig 12);

a mold positioning assembly generally located at said receiving region and configured to move a mold pair positioned thereat into abutting adjacency with a said mold pair at said reference region (Fig 5);

first and second release assemblies respectively drivably engageable with one mold of a said mold pair subsequent to movement of said mold pair through said forming tunnel region and configured to drive the secondary carriage of each said mold along said second locus of travel into said release orientation and move said molds to respective first and second receiving positions (Fig 6);

first and second mold return assemblies each spaced outwardly from said axis and configured to receive one mold of each mold pair at a respective said first and second receiving position and to drivably move the primary carriage of each said received mold to respective first and second queue regions having respective first and second forwardmost feed positions adjacent respective said first and second acquisition positions and further configured to move each mold of a mold pair having a mold at said first and second forwardmost feed positions into respective said first and second acquisition positions (Figs 14);

said first and second return assemblies are configured to maneuver the said secondary carriages along said second locus of travel into said mold defining orientation (Fig 12);

said mold positioning assembly comprises first and second pusher assemblies each configured to move a respective mold of a mold pair synchronously into said abutting adjacency with a mold pair at said reference region (Figs 12 and 14);

said first and second return assemblies are each configured with first and second spaced apart return rails extending from respective said first and second receiving positions to respective said first and second forwardmost feed positions, said first and second return rails being configured to movably support a said primary carriage, and further comprising respective first and second rail conveyor assemblies engageable with a said primary carriage at a respective said first and second receiving position and configured to move a said engaged primary carriage into a respective said first and second queue region (Figs 7 and 12);

said first and second rail conveyor assemblies are further configured to engage a primary carriage located at respective said first and second forwardmost feed positions and move it into respective said first and second acquisition positions (Fig 6);

said first and second rail conveyor assemblies are configured to engage and move three adjacent said primary carriages including primary carriages at said first and second forwardmost feed positions at respective said first and second queue regions (Fig 1);

first and second rail conveyor assemblies are configured to engage said three adjacent primary carriages in a manner mutually spacing them apart a queue distance, said queue distance is about one inch (Figs 1 and 14);

said first and second return assemblies further comprise respective first and second arrays of parking assemblies configured to engage and hold stationary those primary carriages located at respective first and second queue regions when not engaged with a respective said first and second rail conveyor assembly (Fig 12).

Dietrich et al (5,773,044) fails to teach the molds dynamically connectable with a vacuum source and a cooling fluid.

Lupke et al teach a translatable corrugated mold connected with a vacuum source and a cooling fluid for the purpose of enhanced cooling (col 3, lines 50-65).

It would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to have modified the invention of Dietrich et al (5,773,044) with the mold connected with a vacuum source and a cooling fluid as taught by Lupke et al

because such construction enhances the setting of the molten plastic into a finished product.

10. Claims 1-2 and 28-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hegler (5,693,347) in view of Lupke et al (6,054,089).

A system for producing corrugated pipe by maneuvering paired molds about a die assembly generally disposed about a system axis and having a paired mold receiving region, a paired mold reference region, an annular die nozzle spaced from said reference region at the entrance of a forming tunnel region defined by an abutting sequence of paired molds extending to a forming tunnel exit having a plurality of paired molds, each mold having a generally semi- cylindrically configured corrugate mold profile, each said mold being supported upon a carriage assembly having a first locus of travel generally parallel with said axis and a second locus of travel generally transverse to said axis extending between mold defining and release orientations and each said carriage assembly having a connector assembly drivable to move said mold in a direction generally parallel with said axis (Fig 1);

a translation assembly extending in parallel relationship with said axis generally from said reference region to said forming tunnel exit location and engageable in driving relationship with the connector assemblies of said paired molds to effect their movement through said forming tunnel region along said first locus of travel when their associated carriage assemblies are in said mold defining orientation (Fig 1, #13);

first and second mold return assemblies each spaced outwardly from said axis and configured to receive one mold of each mold pair at a respective first and second

receiving position and to drivably move each said received mold to respective first and second queue regions having respective first and second forwardmost feed positions and to move each mold at said first and second forwardmost feed positions to respective first and second acquisition positions (Fig 1, #34);

first and second release assemblies respectively drivably engageable with one mold of a said mold pair generally subsequent to movement of said mold pair through said forming tunnel region and configured to drive the carriage assembly of each said mold along said second locus of travel into said release orientation and move said molds to respective said first and second receiving positions (Fig 1, #35);

first and second mold feed assemblies configured to move the molds of a mold pair from respective said first and second acquisition positions to a paired mold receiving region (Fig 1, at #15); and

a mold positioning assembly engageable with a mold pair at said receiving region and configured to move said mold pair at said receiving region into abutting engagement with a mold pair located at said reference region (Fig 1, at #15);

said first and second return assemblies are configured to maneuver respective said mold carriage assemblies along said second locus of travel into said mold defining orientation (Fig 1, #34);

a plurality of paired molds, each mold having a generally semi- cylindrically configured corrugate mold profile, each said mold being supported upon a carriage assembly having a rail mountable primary carriage with a first locus of travel generally parallel with said axis and a secondary carriage with a second locus of travel generally

transverse to said axis extending between mold defining and release orientations and each said carriage assembly having a connector assembly drivable to move said mold in a direction generally parallel with said axis (Fig 1, #36);

first and second feed assemblies extending generally transversely to said system axis from respective first and second acquisition positions to a paired mold receiving region generally aligned with said system axis, each said first and second feed assembly being configured to acquire a mold of a mold pair at a respective said first and second acquisition position and move it into paired relationship establishing a said mold pair at said receiving region (Fig 1, at #15);

a translation assembly generally extending in parallel with said axis drivably engageable with the connector assemblies of the said primary carriages of a mold pair at a reference region to establish a forming tunnel region as a sequence of mutually adjacently disposed paired molds moving in driven relationship with said translation assembly along said primary carriage first locus of travel (Fig 1, #13);

a mold positioning assembly generally located at said receiving region and configured to move a mold pair positioned thereat into abutting adjacency with a said mold pair at said reference region (Fig 1, at #15);

first and second release assemblies respectively drivably engageable with one mold of a said mold pair subsequent to movement of said mold pair through said forming tunnel region and configured to drive the secondary carriage of each said mold along said second locus of travel into said release orientation and move said molds to respective first and second receiving positions (Fig 1, at #35);

first and second mold return assemblies each spaced outwardly from said axis and configured to receive one mold of each mold pair at a respective said first and second receiving position and to drivably move the primary carriage of each said received mold to respective first and second queue regions having respective first and second forwardmost feed positions adjacent respective said first and second acquisition positions and further configured to move each mold of a mold pair having a mold at said first and second forwardmost feed positions into respective said first and second acquisition positions (Fig 1);

said first and second return assemblies are configured to maneuver the said secondary carriages along said second locus of travel into said mold defining orientation (Fig 1, #s 34 and 36);

said mold positioning assembly comprises first and second pusher assemblies each configured to move a respective mold of a mold pair synchronously into said abutting adjacency with a mold pair at said reference region (Fig 1);

said first and second return assemblies are each configured with first and second spaced apart return rails extending from respective said first and second receiving positions to respective said first and second forwardmost feed positions, said first and second return rails being configured to movably support a said primary carriage, and further comprising respective first and second rail conveyor assemblies engageable with a said primary carriage at a respective said first and second receiving position and configured to move a said engaged primary carriage into a respective said first and second queue region (Fig 1);

said first and second rail conveyor assemblies are further configured to engage a primary carriage located at respective said first and second forwardmost feed positions and move it into respective said first and second acquisition positions (Figs 1 and 3);

said first and second rail conveyor assemblies are configured to engage and move three adjacent said primary carriages including primary carriages at said first and second forwardmost feed positions at respective said first and second queue regions (Fig 3);

first and second rail conveyor assemblies are configured to engage said three adjacent primary carriages in a manner mutually spacing them apart a queue distance, said queue distance is about one inch (Fig 3);

said first and second return assemblies further comprise respective first and second arrays of parking assemblies configured to engage and hold stationary those primary carriages located at respective first and second queue regions when not engaged with a respective said first and second rail conveyor assembly (Fig 1, #s 34 and at #35).

Hegler fails to teach the molds dynamically connectable with a vacuum source and a cooling fluid.

Lupke et al teach a translatable corrugated mold connected with a vacuum source and a cooling fluid for the purpose of enhanced cooling (col 3, lines 50-65).

It would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to have modified the invention of Hegler with the mold

connected with a vacuum source and a cooling fluid as taught by Lupke et al because such construction enhances the setting of the molten plastic into a finished product.

References of Interest

11. Dietrich (5,522,718) is cited of interest to show the state of the art.

Allowable Subject Matter

12. Claims 7-15 and 37-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fails to teach or suggest wheels to transport the claimed primary carriages for transport along the first locus of travel and the second carriage coupled in supporting relationship with the mold movable upon the primary carriage along the second locus of travel and having a follower extending therefrom.

Correspondence

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Joseph S. Del Sole whose telephone number is (571) 272-1130. The examiner can normally be reached on Monday through Friday from 8:30 A.M. to 5:00 P.M.

If attempts to reach the Examiner by telephone are unsuccessful, Mr. Duane Smith can be reached at (571) 272-1166. The official fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for both non-after finals and for after finals.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from the either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 886-217-9197 (toll-free).

Joseph S. Del Sole
November 8, 2005